3rd edition Marcellus Shale Gas Environmental Summit

Environmental and operational implications of water use in shale gas extraction

Pittsburgh, Pennsylvania, October 24 to 26, 2011

www.shalegasevent.com

PRE-CONFERENCE WORKSHOPS, 24 October 2011

9:00 – 11:00 Workshop A: Managing waste and water through bioremediation

(Continental breakfast served during workshop)

Bioremediation is a process in which micro-organisms are utilized to degrade organic contaminants into innocuous end products. The social and environmental responsible waste management that is related to the development of oil and natural gas resources has positive implications on operational economics. This workshop will offer practical insight into how bioremediation can be used *in-situ* and post-excavation to breakdown organic constituents. In addition, the valence state of inorganic contaminants can be altered reducing TDS and associated operational costs and liabilities. Ensuing discussions will focus upon the conditions needed for optimal efficiency of metabolizing micro-organisms when treating hydraulic fracturing wastewater, and other incidental and process-derived wastes. The benefits associated with the implementation of a bioremediation program, relative to exploration and production operations, will be demonstrated environmentally and economically. Attendees to this workshop will be better able to:

- Implement best management practices for water use
- Maximize beneficial reuse of water
- Manage costs associated with wastewater management

Jason Rauen, Director, HRL Compliance Solutions, Inc.
Maurice Foye, Vice President of Business Operations, HRL Compliance Solutions, Inc.

11:30 – 1:30 Workshop B: Addressing regulatory change through permitting procedures

(Box lunch served during workshop)

Requirements in the permitting process ultimately determine the environmental impact that a respective well will have on local groundwater sources. Pennsylvania is revisiting its permitting procedures in hopes of achieving a set of best practices governing natural gas wells and in hopes of increasing industry transparency. This workshop will provide an investigative look into Pennsylvania's proposed regulation surrounding permits as well as an educational primer preparing stakeholders to successfully navigate the permitting process. Attendees to this workshop will be better able to:

- Prepare for upcoming legislation in the state of Pennsylvania
- Comply with existing and new environmental regulations
- Understand the requirements of well permitting procedures

Russ Krauss, Vice President of Business Development, Resource Environmental Solutions, LLC
Curtis Stambaugh, Partner, McNees, Wallace, & Nurick LLC

2:00 – 4:00 Workshop C: Solving the public relations dilemma: mitigating misconception and educating the consumer

New research shows that any previously held positive public sentiment on Marcellus Shale development is slowly eroding in traditional and social media circles. However, despite the environmental impacts of high volume hydraulic fracturing, Marcellus Shale and its wealth of reserves is really about people, opportunity, jobs, clean energy, and energy interdependence and security. This workshop will provide tactical techniques to help companies win the Marcellus Shale public relations war. Attendees to this workshop will be better able to:

- Employ strategies that boost public profiles
- Understand how local populations perceive hydraulic fracturing in the Marcellus play
- Engage in effective corporate social responsibility

Mike Smith, Executive Director, Interstate Oil & Gas Compact Commission

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MAIN CONFERENCE DAY 1, 25 October 2011

9:00 Chairman's Welcome

9:15 Opening Address: Pennsylvania state legislature and regulation of liquids in the Marcellus play

Pennsylvania is contemplating the implementation of revised regulations pertaining to hydraulic fracturing. This Opening Address offers a critical look at the proposed legislation which will affect the issuance of drilling permits, water management, and environmental compliance. Updates issued during this session will also discuss the competitive nature of the gas drilling industry and its economic benefits for the state. Attendees to this session will be better able to:

- Understand the macroeconomic drivers influencing domestic energy policy
- Achieve environmental compliance
- Engage in responsible shale gas development

Hon. Garth Everett, State Representative, 84th Legislative District, Pennsylvania State House of Representatives

10:00 Keynote Address: Federal regulations for environmental protection of the Marcellus shale play

Shale formations have the potential to more than double the world's gas reserves. However, negative public opinions surrounding the industry are driving ever more stringent environmental regulation. This session will provide updates on how the future of shale gas extraction in America is now being determined and whether regulatory parameters will be defined at the state or at the federal level. Attendees to this session will be better able to:

- Minimize the environmental impact of drilling operations
- Meet federal and state standards for health, safety, and the environment
- Communicate the positive economic and technical truths of shale gas production to the public

Shawn Garvin, Regional Administrator, Region 3, Environmental Protection Agency

10:45 Networking & Coffee

11:30 Interactive Panel: State specific environmental regulation and water policies in Appalachia

The Marcellus play reaches across several key states in the Appalachian region. This session will unite industry stakeholders from a cross section of Marcellus region states to compare and contrast drilling regulation, permitting procedures, and environmental compliance in the Marcellus play region. A series of short presentations will be followed by updates from West Virginia and Ohio, among others. Attendees to this session will be better able to:

- Understand state by state requirements for horizontal drilling
- Develop plans for extraction in less explored areas of the Marcellus play
- Adapt best management practices developed in other shale plays

Tom Tugend, Deputy Chief, Oil & Gas Program, Department of Natural Resources, Ohio
Charlie Burd, President, Independent Oil & Gas Association of West Virginia
James Tierney, Assistant Commissioner, Water Resources, Department of Environmental Conservation, New York
John R. Griffin, Secretary, Maryland Department of Natural Resources

12:30 Lunch

1:45 Case Study: Value-added services for local community outreach

Studies have shown that local communities are generally supportive of extraction operations in their region if revenues are returned to areas experiencing growth. Methods designed to attribute economic benefits back to local populations including wealth creation from leasing activity, business growth, and tax impacts enable local partnerships and create transparency in the development of land lease agreements. This session will offer a tactical look at new ways to incorporate environmental stewardship into daily operations, provide opportunities for natural gas consumption from local shale gas wells, and mitigate negative perceptions through enhanced transparency and safe water management. Attendees to this session will be better able to:

- Engage local populations to effectively target misconception
- Create transparent partnerships with local stakeholders
- Work with landowners to prevent third party damage

George Stark, Director of External Affairs, Cabot Oil & Gas

2:30 Community Water Safety

Water safety concerns every aspect of the shale gas extraction life cycle and environmental advocates are one of the leading drivers of regulatory policy surrounding the use of water. This session offers a critical look into establishing best practices for monitoring streams, rivers, groundwater and preventing third party damage based upon environmental impact studies now being implemented on the ground. Ensuing discussions will investigate how to engage local communities and better understand the infrastructural needs of Appalachian development. Attendees to this session will be better able to:

- Develop effective water management plans
- Monitor water quality
- Safely reuse and recycle flowback water

Mark Scheuerman, General Counsel and Manager of Government and Media Relations, Talisman Energy

3:15 Networking & Coffee

4:00 Case study: Water quality management

Latest industry trends now lend towards maximizing the reuse of water in order to minimize the disposal of wastewater. This session offers an investigative look at current and emerging technologies and their practical application in achieving best practices for water quality management. Attendees to this session will be better able to:

- Maximize the beneficial reuse of water in daily operations
- Integrate best management practices into existing operations
- Characterize the composition and quality of flowback water

James Eddy Grey, Senior Vice President & Chief Operating Officer, Triana Energy

4:45 Best Management Practices in advanced hydraulic fracturing drilling techniques

Horizontal drilling and hydraulic fracturing technology is rapidly advancing, stimulating significant growth in shale gas extraction volume and promoting the need to establish benchmarked best management practices for safe drilling procedures. This session will investigate measures to optimize project development, well casing and completion, and minimize associated environmental impact. Attendees to this session will be better able to:

- Monitor technology to enhance stimulation treatments
- Assess potential operational challenges
- Ensure methods for environmentally safe hydraulic fracturing

John Centofanti, Director of Health, Safety, and Environment, EQT Corporation

5:30 Close of Day 1

MAIN CONFERENCE DAY 2, 26 October 2011

9:00 Chairmen's opening remarks

9:15 Access to local water resources

Water is an essential component to any energy resource development. In the Marcellus play, where is the water coming from? This session offers practical insight into procedures that operators will need to have in place to maximize their access to water supplies. The Susquehanna River Basin will also deliver updates on how much water is being approved for withdrawal, the specifics of the approval process, compliance, and enforcement. Attendees to this session will be better able to:

- Ensure reliable access to local water supplies
- Understand restrictions governing the withdrawal of water
- Determine convenient site locations based on flowrate and water quality

Paul Swartz, Executive Director, Susquehanna River Basin Commission

10:00 Stray gas and the risks of groundwater contamination

Methane trapped in shallow rock between the surface and the Marcellus shale can escape into drinking water aquifers. This session will evaluate the potential impacts associated with gas-well drilling and fracturing on groundwater, discuss the outcome of recent studies on methane migration, and offer insight into how to combat the risks of contamination through the implementation of casing and cementing methods which conform to newly updated regulations. Attendees to this session will be better able to:

- Minimize potential for groundwater contamination
- Mitigate risks of methane migration
- Control how water use in hydraulic fracturing affects local wetlands and streams

Ben Grunewald, Associate Director, Groundwater Protection Council, Oklahoma

10:45 Networking & Coffee

11:30 Case Study: Marcellus test site project

Environmental monitoring conducted prior to drilling establishes a baseline from which to assess operational impact once drilling commences. This session offers an in-depth look at the Marcellus test site project and how its outcome will influence local environmental decisions. Attendees to this session will be better able to:

- Conduct environmental monitoring
- Minimize environmental impacts of drilling operations
- Adapt best management practices used in other shale plays

John Duda, Director, Strategic Center for Natural Gas, National Energy Technology Laboratory
Richard Hammack, Physical Scientist, Geosciences Division, National Energy Technology Laboratory

12:15 pm Lunch

1:30 Case study: Alternatives to public water treatment

Water treatment is important because demand for treating wastewater from shale gas extraction is currently at about 9 million gallons per day in the state of Pennsylvania alone. In conjunction with proposed 2011 water quality discharge standards for the Marcellus region, water recycling efforts, as a means to eliminate flowback water disposal, is expected to play a significant role in assisting operators to achieve environmental compliance. This session discusses how best to incorporate alternatives to public water treatment into the operator's business model. Attendees to this session will be better able to:

- Maximize reuse of water
- Manage costs associated with water treatment and disposal
- Meet short and long-term environmental compliance goals

Patrick McKinney, Chief Operating Officer, Rex Energy Corporation

2:15 Accident remediation: prevention and clean-up techniques

Accident remediation deals with the removal of pollution or contaminants from environmental media such as soil, groundwater, sediment, or surface water. A series of 2 presentations will provide a critical look at how to minimize contamination and implement efficient remediation procedures following a natural gas operational incident with particular attention paid to remediation standards, site assessment, and the main impacts of remediation itself which include noise, dust, odor and incremental health risk to local populations. Attendees to this session will be better able to:

- Employ techniques in accident prevention
- React quickly and strategically in the case of an operational accident
- Understand the requirements of accident remediation

Ron Borsellino, Director, Hazardous Site Clean-up Division, Region 3, Environmental Protection Agency

3:00 Networking & Coffee

3:45 Long term planning for shale gas extraction

A shifting regulatory climate influenced by ongoing environmental impact assessments is a challenging obstacle to long-term planning for shale gas extraction. This session provides an in-depth look at strategies for planning in a state and federally regulated climate with particular focus on the role of natural gas in powering the national grid and promoting North American energy security. Attendees to this session will be better able to:

- Strategize community involvement plans to ensure positive public involvement
- Understand the role of shale gas in achieving domestic energy security
- Identify potential adverse impacts of diversified exploration and production

Michael Worden, Petroleum Engineer, Bureau of Land Management

4:30 Close of Day 2